



Montana Department of
ENVIRONMENTAL QUALITY

MAILED

12-18-08 gh

Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

December 19, 2008

Mr. Ben Sautter
City of Helena
City/County Building
316 N. Park Avenue
Helena, MT 59623

RE: **CLOSED CITY OF HELENA CLASS II LANDFILL – LICENSE #90**
ANNUAL GROUNDWATER EXTRACTION SYSTEM PERFORMANCE REPORT NOVEMBER 2007
DATA VALIDATION REPORT, GROUNDWATER QUALITY DATA, SEMI-ANNUAL SAMPLING
DECEMBER 2007
STATISTICAL EVALUATION OF SEPTEMBER 2007 AND DECEMBER 2007 GROUNDWATER
QUALITY DATA
DATA VALIDATION REPORT FOR MARCH 2008 QUARTERLY SAMPLING
DATA VALIDATION REPORT, GROUNDWATER QUALITY DATA, SEMI-ANNUAL SAMPLING JUNE
2008
STATISTICAL EVALUATION OF MARCH 2008 AND JUNE 2008 GROUNDWATER QUALITY DATA
ANNUAL GROUNDWATER EXTRACTION SYSTEM PERFORMANCE REPORT NOVEMBER 2008
DECEMBER 16, 2008 MEETING OF DEQ, CITY OF HELENA, AND HYDROMETRICS

Dear Mr. Sautter:

The Department has reviewed the above noted reports for the closed City of Helena Class II Landfill in Lewis and Clark County, MT. Thank you for your patience regarding the Department's response to your submittals. The groundwater monitoring reports meet the requirements of the Administrative Rules of Montana (ARM) 17.50.708 with the exception of the following issues which were discussed during the December 16, 2008 meeting:

- The statistical analyses currently applied do not meet the requirements of ARM 17.50.708(12) and (13). As agreed in the meeting, an appropriate statistical analysis will be performed for Table 1 parameters excluding VOCs at all point of compliance wells. The current statistical analysis of VOCs is sufficient to evaluate the effectiveness of the corrective measures.
- The wells were not sampled in the order listed in the Sampling and Analysis Plan (SAP). As discussed in the meeting the order of sampling is important for all wells that do not use dedicated or disposable equipment. In the future, the City agreed to explain any variances in the report.
- The field data sheets are not completed as stated in the SAP. In the meeting the Department requested that field readings be taken throughout purging and recorded on the field data sheets to show stabilization of the field parameters for all wells. Stabilization is defined as three consecutive regularly timed readings of Temperature, pH, and Specific Conductance within 10%.
- No field instrument calibration records, Chain-of-Custody forms, or laboratory check in forms were included in the December 2007 report. These documents were provided to the Department at the meeting.

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- Sample handling and preservation issues:
 - Several samples were received by the laboratory with unacceptable pH. As discussed in the meeting, Hydrometrics will review and revise sample preservation procedures to minimize pH problems.
 - One sample was received at an unacceptable temperature. As discussed in the meeting, all other samples have been cooled properly and the reason for this anomaly is unknown.
 - The required holding time was exceeded for three December 2007 Cyanide samples. It was explained in the meeting that the samples were processed in the required holding time but not analyzed until later due the holidays. No further action is needed.

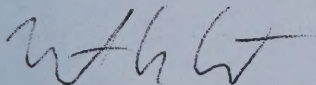
During the December 16, 2008 meeting the following topics were also discussed:

- The Department recommended, in accordance with current EPA guidance, that bailers should not be used for sampling unless necessary. It was agreed that purging and sampling will be conducted using a decontaminated submersible pump wherever possible.
- The Department noted that Circular DEQ-7, Montana Numeric Water Quality Standards, has been updated. It is available at <http://www.deq.mt.gov/wqinfo/standards/CompiledDEQ-7.pdf>.
- The Department requested that the data validation report and statistical evaluation be combined into a single semi-annual groundwater monitoring report to be submitted to the Department within 90 days following sampling.
- The Department noted the increase in PCE concentrations to the City's action limit of 0.004 mg/l at the down-gradient Residential Well #5 for the June 2008 sampling event. This well was resampled in July 2008 with a result of 0.0036 mg/l, thus no further action was needed. It was agreed that PCE concentrations in the downgradient residential wells will continue to be closely monitored.

The Department appreciates the City's efforts towards the continued improvement of the groundwater quality beneath the site. Based on the data provided in these reports, the Department agrees that the combined corrective measures have proven effective towards the reduction in VOC concentrations at the closed landfill.

The facility remains in corrective action with semi-annual monitoring at this time. If you have any questions or comments, please do not hesitate to contact me at the Permitting and Compliance Division, Waste and Underground Tank Management Bureau, Solid Waste Program.

Sincerely,



Martin Van Oort
Environmental Science Specialist
Solid Waste Program

Phone: 406-444-2802, Fax: 406-444-1374

E-mail: mvanoort@mt.gov

During the December 16, 2008 meeting, the following topics were discussed:

- The Department recommended to schedule with current EPA guidance that data should not be used for sampling outside necessary. It was agreed that sampling and sampling will be conducted using a direct-push instrument wherever possible.
- The Department noted that the data validation report and remedial evaluation be combined into a single environmental assessment monitoring report to be submitted to the Department.
- The Department noted the increase in PCB concentrations in the City's action limit of 0.004 mg/L at the down-gradient Residential Well #2 for the June 2004 sampling event. This well was sampled in July 2005 with a result of 0.0036 mg/L, thus no further action was needed. It was agreed that PCB concentrations in the down-gradient residential wells will continue to be closely monitored.

During the December 16, 2008 meeting, the following topics were also discussed:

- The Department recommended to schedule with current EPA guidance that data should not be used for sampling outside necessary. It was agreed that sampling and sampling will be conducted using a direct-push instrument wherever possible.
- The Department noted that the data validation report and remedial evaluation be combined into a single environmental assessment monitoring report to be submitted to the Department.
- The Department noted the increase in PCB concentrations in the City's action limit of 0.004 mg/L at the down-gradient Residential Well #2 for the June 2004 sampling event. This well was sampled in July 2005 with a result of 0.0036 mg/L, thus no further action was needed. It was agreed that PCB concentrations in the down-gradient residential wells will continue to be closely monitored.

The Department requested the City's efforts towards the continued improvement of the groundwater quality around the site. Based on the data provided in these reports, the Department agrees that the combined corrective measures have proved effective towards the reduction in VOC concentrations at the closed landfill.

The facility continues to demonstrate a commitment with semi-annual monitoring at this time. If you have any questions or comments, please do not hesitate to contact me at the Permitting and Compliance Division. Warm and respectful regards, [illegible]

Sincerely,

[Signature]

Debra Van Der
Permitting and Compliance Division
Solid Waste Program
Phone: 404-388-1111 Fax: 404-388-1111
E-mail: [illegible]

Correspondence Slip

Project ID: _____

Requested: 12/16/08Needed By: 12/19/08Originator: MVO

Org(s)/Mail Code: _____

REVIEW
ROUTING

Name

Task

Initial/Date

AdminProofJH, 12-16Mary HReviewJH, 12-18DarrellReviewDas, 12/18RockReviewRT, 12-18-08

Mail original via:

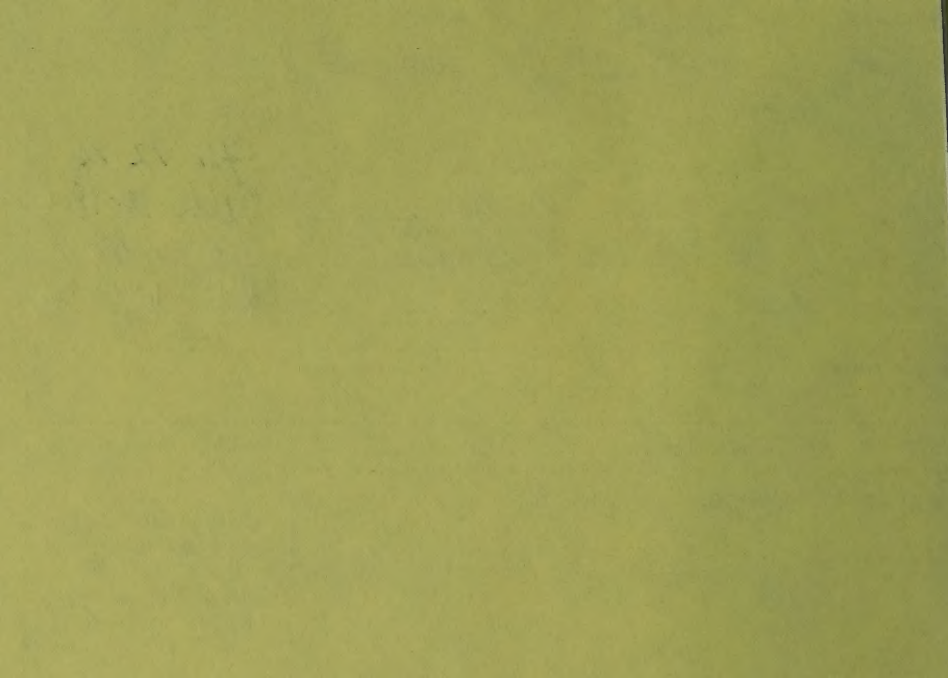
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County Lewis & Clark

Facility & # City of Helena #90

Closure Landfarm

Finan Assur Liner

GW Corr Meas Methane

GW Monitoring O & M

GW Reports Run-on

Inspections

Other: _____



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November 18, 2008

NOV 19 2008

Ms. Mary Louise Hendrickson
Environmental Science Specialist
Montana Department of Environmental Quality
Permitting and Compliance Division
Waste & Underground Tank Management Bureau
Solid Waste Program
P.O. Box 200901
Helena, MT 59620

Dept. of Enviro. Quality
Waste & Underground
Tank Management Bureau

Dear Mary Louise,

Enclosed for your review are the proposed monitoring sites and analytical schedule for the December 2008 semiannual groundwater monitoring at the Helena Landfill. Water level measurements will be obtained from several additional monitoring wells to ensure an accurate potentiometric surface map can be established. This sampling regime is as listed in the approved Revised Sampling and Analysis Plan, City of Helena Landfill, Groundwater, Surface Water, and Landfill Gas Monitoring Activities (Hydrometrics, 2008). Sampling personnel will be attempting to sample the week of December 8, 2008. Please call if you have any questions or comments.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

c: John Rundquist, City of Helena
Ben Sautter, City of Helena
Mike Wignot, Hydrometrics

HELENA LANDFILL
DECEMBER 2008 SAMPLE SITE AND PARAMETER LIST

Site Name	Parameter
Monitoring Wells ⁽¹⁾	
INF. GALLERY	Water level only
MPC-2	Water level only
HL-90-2	Water level only
HL-94-1	Table 1
HL-94-3	Water level only
HL-06-1	Table 1
HL-90-3	Water level only
HL-94-2	Water level only
I-1	Water level only
HL-99-1	Table 1
HL-99-2	Table 1
HL-90-1	Table 1
HL-99-3	Table 1
MPC-1	Water level only
I-4	Water level only
EPA-1	Water level only
MPC-5	Table 1
Residential Wells:	
5	Table 1 VOC's only
16	Table 1 VOC's only
Quality Control:	
Duplicate (HL-90-1)	Table 1
Trip Blank	Table 1
Rinsate Blank	Table 1

(1) Monitoring wells are listed in the order to be sampled.

TABLE 1. ANALYSIS OF THE FIVE AND SEVEN SAMPLES

Sample Name	Parameter
Sample 1	Water level only
Sample 2	Water level only
Sample 3	Water level only
Sample 4	Water level only
Sample 5	Water level only
Sample 6	Water level only
Sample 7	Water level only
Sample 8	Water level only
Sample 9	Water level only
Sample 10	Water level only
Sample 11	Water level only
Sample 12	Water level only
Sample 13	Water level only
Sample 14	Water level only
Sample 15	Water level only
Sample 16	Water level only
Sample 17	Water level only
Sample 18	Water level only
Sample 19	Water level only
Sample 20	Water level only
Sample 21	Water level only
Sample 22	Water level only
Sample 23	Water level only
Sample 24	Water level only
Sample 25	Water level only
Sample 26	Water level only
Sample 27	Water level only
Sample 28	Water level only
Sample 29	Water level only
Sample 30	Water level only
Sample 31	Water level only
Sample 32	Water level only
Sample 33	Water level only
Sample 34	Water level only
Sample 35	Water level only
Sample 36	Water level only
Sample 37	Water level only
Sample 38	Water level only
Sample 39	Water level only
Sample 40	Water level only
Sample 41	Water level only
Sample 42	Water level only
Sample 43	Water level only
Sample 44	Water level only
Sample 45	Water level only
Sample 46	Water level only
Sample 47	Water level only
Sample 48	Water level only
Sample 49	Water level only
Sample 50	Water level only
Sample 51	Water level only
Sample 52	Water level only
Sample 53	Water level only
Sample 54	Water level only
Sample 55	Water level only
Sample 56	Water level only
Sample 57	Water level only
Sample 58	Water level only
Sample 59	Water level only
Sample 60	Water level only
Sample 61	Water level only
Sample 62	Water level only
Sample 63	Water level only
Sample 64	Water level only
Sample 65	Water level only
Sample 66	Water level only
Sample 67	Water level only
Sample 68	Water level only
Sample 69	Water level only
Sample 70	Water level only
Sample 71	Water level only
Sample 72	Water level only
Sample 73	Water level only
Sample 74	Water level only
Sample 75	Water level only
Sample 76	Water level only
Sample 77	Water level only
Sample 78	Water level only
Sample 79	Water level only
Sample 80	Water level only
Sample 81	Water level only
Sample 82	Water level only
Sample 83	Water level only
Sample 84	Water level only
Sample 85	Water level only
Sample 86	Water level only
Sample 87	Water level only
Sample 88	Water level only
Sample 89	Water level only
Sample 90	Water level only
Sample 91	Water level only
Sample 92	Water level only
Sample 93	Water level only
Sample 94	Water level only
Sample 95	Water level only
Sample 96	Water level only
Sample 97	Water level only
Sample 98	Water level only
Sample 99	Water level only
Sample 100	Water level only

(1) Sample 1 and 2 are the only samples that are not in the list.

County Lewis & Clark

Facility & # City of Helena #90

Closure Landfarm

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GW Corr Meas Methane

GW Monitoring O & M

GW Reports Run-on

Inspections

Other: _____

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June 3, 2008

Ms. Mary Louise Hendrickson
Environmental Science Specialist
Montana Department of Environmental Quality
Permitting and Compliance Division
Waste & Underground Tank Management Bureau
Solid Waste Program
P.O. Box 200901
Helena, MT 59620

Dear Mary Louise,

Enclosed for your review are the proposed monitoring sites and analytical schedule for the June 2008 semiannual groundwater monitoring at the Helena Landfill. This sampling regime is as listed in the approved Revised Sampling and Analysis Plan for the City of Helena (Hydrometrics, 2006). Sampling personnel will be attempting to sample the week of June 16. Please call if you have any questions or comments.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

c: John Rundquist, City of Helena
Ben Sautter, City of Helena
Mike Wignot, Hydrometrics

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JUN 04 2008

Dept. of Enviro. Quality
Waste & Underground
Tank Management Bureau

TABLE 1. SUMMARY OF DATA FROM MONITORING WELLS

Monitoring Well	Depth (ft)	Data from Monitoring Wells	
		Table 1 VOC's only	Table 1 VOC's only
1	10	10	10
2	15	15	15
3	20	20	20
4	25	25	25
5	30	30	30
6	35	35	35
7	40	40	40
8	45	45	45
9	50	50	50
10	55	55	55
11	60	60	60
12	65	65	65
13	70	70	70
14	75	75	75
15	80	80	80
16	85	85	85
17	90	90	90
18	95	95	95
19	100	100	100
20	105	105	105
21	110	110	110
22	115	115	115
23	120	120	120
24	125	125	125
25	130	130	130
26	135	135	135
27	140	140	140
28	145	145	145
29	150	150	150
30	155	155	155
31	160	160	160
32	165	165	165
33	170	170	170
34	175	175	175
35	180	180	180
36	185	185	185
37	190	190	190
38	195	195	195
39	200	200	200
40	205	205	205
41	210	210	210
42	215	215	215
43	220	220	220
44	225	225	225
45	230	230	230
46	235	235	235
47	240	240	240
48	245	245	245
49	250	250	250
50	255	255	255
51	260	260	260
52	265	265	265
53	270	270	270
54	275	275	275
55	280	280	280
56	285	285	285
57	290	290	290
58	295	295	295
59	300	300	300
60	305	305	305
61	310	310	310
62	315	315	315
63	320	320	320
64	325	325	325
65	330	330	330
66	335	335	335
67	340	340	340
68	345	345	345
69	350	350	350
70	355	355	355
71	360	360	360
72	365	365	365
73	370	370	370
74	375	375	375
75	380	380	380
76	385	385	385
77	390	390	390
78	395	395	395
79	400	400	400
80	405	405	405
81	410	410	410
82	415	415	415
83	420	420	420
84	425	425	425
85	430	430	430
86	435	435	435
87	440	440	440
88	445	445	445
89	450	450	450
90	455	455	455
91	460	460	460
92	465	465	465
93	470	470	470
94	475	475	475
95	480	480	480
96	485	485	485
97	490	490	490
98	495	495	495
99	500	500	500
100	505	505	505
101	510	510	510
102	515	515	515
103	520	520	520
104	525	525	525
105	530	530	530
106	535	535	535
107	540	540	540
108	545	545	545
109	550	550	550
110	555	555	555
111	560	560	560
112	565	565	565
113	570	570	570
114	575	575	575
115	580	580	580
116	585	585	585
117	590	590	590
118	595	595	595
119	600	600	600
120	605	605	605
121	610	610	610
122	615	615	615
123	620	620	620
124	625	625	625
125	630	630	630
126	635	635	635
127	640	640	640
128	645	645	645
129	650	650	650
130	655	655	655
131	660	660	660
132	665	665	665
133	670	670	670
134	675	675	675
135	680	680	680
136	685	685	685
137	690	690	690
138	695	695	695
139	700	700	700
140	705	705	705
141	710	710	710
142	715	715	715
143	720	720	720
144	725	725	725
145	730	730	730
146	735	735	735
147	740	740	740
148	745	745	745
149	750	750	750
150	755	755	755
151	760	760	760
152	765	765	765
153	770	770	770
154	775	775	775
155	780	780	780
156	785	785	785
157	790	790	790
158	795	795	795
159	800	800	800
160	805	805	805
161	810	810	810
162	815	815	815
163	820	820	820
164	825	825	825
165	830	830	830
166	835	835	835
167	840	840	840
168	845	845	845
169	850	850	850
170	855	855	855
171	860	860	860
172	865	865	865
173	870	870	870
174	875	875	875
175	880	880	880
176	885	885	885
177	890	890	890
178	895	895	895
179	900	900	900
180	905	905	905
181	910	910	910
182	915	915	915
183	920	920	920
184	925	925	925
185	930	930	930
186	935	935	935
187	940	940	940
188	945	945	945
189	950	950	950
190	955	955	955
191	960	960	960
192	965	965	965
193	970	970	970
194	975	975	975
195	980	980	980
196	985	985	985
197	990	990	990
198	995	995	995
199	1000	1000	1000
200	1005	1005	1005
201	1010	1010	1010
202	1015	1015	1015
203	1020	1020	1020
204	1025	1025	1025
205	1030	1030	1030
206	1035	1035	1035
207	1040	1040	1040
208	1045	1045	1045
209	1050	1050	1050
210	1055	1055	1055
211	1060	1060	1060
212	1065	1065	1065
213	1070	1070	1070
214	1075	1075	1075
215	1080	1080	1080
216	1085	1085	1085
217	1090	1090	1090
218	1095	1095	1095
219	1100	1100	1100
220	1105	1105	1105
221	1110	1110	1110
222	1115	1115	1115
223	1120	1120	1120
224	1125	1125	1125
225	1130	1130	1130
226	1135	1135	1135
227	1140	1140	1140
228	1145	1145	1145
229	1150	1150	1150
230	1155	1155	1155
231	1160	1160	1160
232	1165	1165	1165
233	1170	1170	1170
234	1175	1175	1175
235	1180	1180	1180
236	1185	1185	1185
237	1190	1190	1190
238	1195	1195	1195
239	1200	1200	1200
240	1205	1205	1205
241	1210	1210	1210
242	1215	1215	1215
243	1220	1220	1220
244	1225	1225	1225
245	1230	1230	1230
246	1235	1235	1235
247	1240	1240	1240
248	1245	1245	1245
249	1250	1250	1250
250	1255	1255	1255
251	1260	1260	1260
252	1265	1265	1265
253	1270	1270	1270
254	1275	1275	1275
255	1280	1280	1280
256	1285	1285	1285
257	1290	1290	1290
258	1295	1295	1295
259	1300	1300	1300
260	1305	1305	1305
261	1310	1310	1310
262	1315	1315	1315
263	1320	1320	1320
264	1325	1325	1325
265	1330	1330	1330
266	1335	1335	1335
267	1340	1340	1340
268	1345	1345	1345
269	1350	1350	1350
270	1355	1355	1355
271	1360	1360	1360
272	1365	1365	1365
273	1370	1370	1370
274	1375	1375	1375
275	1380	1380	1380
276	1385	1385	1385
277	1390	1390	1390
278	1395	1395	1395
279	1400	1400	1400
280	1405	1405	1405
281	1410	1410	1410
282	1415	1415	1415
283	1420	1420	1420
284	1425	1425	1425
285	1430	1430	1430
286	1435	1435	1435
287	1440	1440	1440
288	1445	1445	1445
289	1450	1450	1450
290	1455	1455	1455
291	1460	1460	1460
292	1465	1465	1465
293	1470	1470	1470
294	1475	1475	1475
295	1480	1480	1480
296	1485	1485	1485
297	1490	1490	1490
298	1495	1495	1495
299	1500	1500	1500
300	1505	1505	1505
301	1510	1510	1510
302	1515	1515	1515
303	1520	1520	1520
304	1525	1525	1525
305	1530	1530	1530
306	1535	1535	1535
307	1540	1540	1540
308	1545	1545	1545
309	1550	1550	1550
310	1555	1555	1555
311	1560	1560	1560
312	1565	1565	1565
313	1570	1570	1570
314	1575	1575	1575
315	1580	1580	1580
316	1585		

**HELENA LANDFILL
JUNE 2008 SAMPLE SITE AND PARAMETER LIST**

Site Name	Parameter
Monitoring Wells ⁽¹⁾	
INF. GALLERY	Table 1 VOC's only
MPC-2	Table 1 VOC's only
HL-90-2	Table 1
HL-94-1	Table 1
HL-94-3	Table 1
83-6	Table 1
HL-90-3	Table 1
HL-90-3 (duplicate)	Table 1
HL-94-2	Table 1
I-1	Water level only
HL-99-1	Table 1
HL-99-2	Table 1
HL-90-1	Table 1
HL-99-3	Table 1
MPC-1	Table 1
I-4	Table 1 VOC's only
EPA-1	Table 1
MPC-5	Table 1
Residential Wells:	
5	Table 1 VOC's only
16	Table 1 VOC's only
40	Table 1 VOC's only
48	Table 1 VOC's only
52	Table 1 VOC's only
57	Table 1 VOC's only
62	Table 1 VOC's only
90	Table 1 VOC's only
Quality Control:	
Trip Blank	Table 1
Rinsate Blank	Table 1

(1) Monitoring wells are listed in the order to be sampled.

CLOSED

County Lewis & Clark

Facility & # City of Helena #90

Closure Landfarm

Finan Assur Liner

GW Corr Meas Methane

GW Monitoring O & M

GW Reports Run-on

Inspections

Other: _____



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consulting scientists and engineers

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March 6, 2008

Ms. Mary Louise Hendrickson
Environmental Science Specialist
Montana Department of Environmental Quality
Permitting and Compliance Division
Waste & Underground Tank Management Bureau
Solid Waste Program
P.O. Box 200901
Helena, MT 59620

Dear Mary Louise,

Enclosed for your review are the proposed monitoring sites and analytical schedule for the March 2008 quarterly groundwater monitoring at the Helena Landfill. Sampling personnel will be attempting to sample the week of March 24. Well 5 is being sampled as part of the City's Action Plan for tetrachloroethene (PCE) in downgradient domestic wells. Please call if you have any questions or comments.

Sincerely,

Jodi Bingham, P.E.
Environmental Engineer/Chemist

c: John Rundquist, City of Helena
Ben Sautter, City of Helena
Mike Wignot, Hydrometrics

RECEIVED

MAR 07 2008

Dept. of Enviro. Quality
Waste & Underground
Tank Management Bureau

**HELENA LANDFILL
MARCH 2008 SAMPLE SITE AND PARAMETER LIST**

Site Name	Parameter
Monitoring Wells ⁽¹⁾	
HL-99-3	Table 1 VOC's only
HL-99-2	Table 1 VOC's only
HL-99-1	Table 1 VOC's only
HL-90-1	Table 1 VOC's only
5	Table 1 VOC's only

(1) Wells are listed in the order to be sampled.

MARCH 2008 MONTHLY SITE AND PARAMETER LIST

Site Name	Parameter
HL-201	Table 1 VOC's only
HL-202	Table 1 VOC's only
HL-203	Table 1 VOC's only
HL-204	Table 1 VOC's only
HL-205	Table 1 VOC's only

HL-206 was not a table site in 2008.

**CITY OF HELENA
LICENSE NUMBER 90**

**DATA VALIDATION REPORT
GROUNDWATER QUALITY DATA
SEMI-ANNUAL SAMPLING
JUNE 2008**

**IS LOCATED ON THE
'OVER-SIZED' SHELF**

OUTSIDE ROOM 139

**PREPARED BY
HYDROMETRICS INC**

JULY 2008

CITY OF BIRMINGHAM
LICENSE NUMBER 90

DATA VALIDATION REPORT
KROONVATER OF ALITY DATA
SEMI-ANNUAL SAMPLING
JUNE 2008

IS LOCATED ON THE
FOUR-SEVEN SHELF

OF THE ROOM 130

PREPARED BY
BIRMINGHAM

MAY 2008